Introduction by Challenge Speaker
by Paul Bea, Port Authority of New York and Jersey

I have the pleasure of introducing our Challenge Speaker, as well as being a moderator of this morning's panel. Our challenge speaker, Harry Caldwell, is Chief of Freight Policy with the Office of Freight Management and Operations within the FHWA. He advocates freight productivity and security in U.S. transport policies and programs, and develops policy and legislative strategies to benefit freight and international trades of transport.

From 1988 to 1998, Harry managed development of the biennial condition and performance report to Congress, assessing the capital needs on the nation's highway, bridge and transit systems. In 1994, he authored the readiness assessment of North American transport systems for international trade, and authored the U.S. borders program for TEA-21. He is currently developing a comprehensive multi-modal program for North American freight productivity and national security scheduled for completion in 2002. Mr. Caldwell is also a member of the ICMTS.

From 1994 to 1998, Harry Caldwell served on the World Bank Steering Committee to develop a highway development and management system, a strategic investment tool used by all nations applying for international infrastructure development loans. He initiated a transportation performance measurement system for former satellite nations in Eastern Europe and the Caucases. He developed international transportation system performance measures for the OECD, and has recently developed border simulation software to improve North American ports of entry. He speaks frequently throughout North America on issues of trade transport, economic development and institutional reform. As a professional geographer, Mr. Caldwell was the first non-engineering professional recruited by the FHWA and has been with the agency for 28 years.

CHALLENGE SPEAKER
Harry Caldwell, Chief of Freight Policy
Federal Highway Administration

"Linking the Pieces: Developing an Integrated and Secure North American Freight Transport System"

Congratulations to the people who put together this conference. This is a great collaboration among research and development interest groups for the MTS, including those who are interested in the development of SEA-21 and those of us who are more directly concerned with surface transportation issues, and the reauthorization of TEA-21. I'm going to talk today about some technical issues, but then segue into broader policy considerations on finance and program options as we move into reauthorization.

By way of background, we created a freight office in the Federal Highway Administration in January 2000 as part of our headquarters restructuring. It is the first time in the history of the Federal Highway Administration, dating back to 1917, that there has actually been an office set up to advocate on behalf of freight. It is also the first time any mission statement within the

FHWA organizational structure has, as its operative verb, "advocate". That is our job – to advocate on behalf of freight interests and that is what we do.

It has been a productive working relationship in DOT. We function as a one DOT organization, and are proud to be able to work with MARAD, the US Coast Guard, FAA, FRA, the Federal Motor Carrier Safety Administration, and the Secretary's Office of Intermodalism.

This cycle of reauthorization is going to be a challenge. TEA-21 was a 40% increase over ISTEA authorization levels, and there is some concern that with competing demands on the Federal budget and the increasing focus on national security, the question is – are we going to have that amount of discretionary budget capability as part of reauthorization?

Our needs are great in all modes of transportation – the MTS as well as highways and rail -- and our story is a very important one to share with Congress. I'm going to focus on two challenges – one technical and one more policy-oriented, as we work to tell the story of freight mobility more effectively in the halls of Congress, as well as in Ottawa and Mexico City, our NAFTA trading partners.

This is a slide that many of you have seen before. This is a picture of tremendous success. The U.S. freight transportation system is a multi-modal system providing ready access and superior service to most shippers delivering goods in a cost-effective and environmentally sensitive manner. As the slide illustrates, logistics as a share of GDP has declined steadily since the early 1980's, with the Staggers Act and some of the other deregulation efforts that began about that time.

In a recent article, the Journal of Commerce estimates that this reduction in logistics expenditures has saved the average American household roughly $1,000 a year since the early 80's. Every unnecessary dollar squeezed out of logistics cost is an additional dollar for upgrading plant equipment, for worker training and re-training, for basic and applied research and development, and increased equity share value for companies. Our concern is that this percentage bottomed out at about 9.9% two years ago, and has been inching steadily upward since then. It now stands at about 10.3%. The system is showing signs of strain, and it is being felt by all the modes of freight transport.

All modes of transportation are important in the U.S. economy. Trucking dominates, if you look at both domestic and international trade. If you look at international trade only, waterborne commerce dominates. Waterborne commerce, as you well know, is an important component of both international and domestic movement. It services 41 states, reaching 90% of the U.S. population with waterborne transportation. It carried over 1.1 billion short tons of cargo, 23% of ton miles of all domestic service traffic, and it contributes significantly to GDP.

I'm going to show you some images now that are part of what we call the Freight Analysis Framework. These images are all available on CD and I'll tell you how to get one at the end of this presentation. We can not post these images on our Website for security reasons. But, if you will send me a message through e-mail, we will be happy to put a copy of this in the mail to you.

This shows domestic waterborne commerce, not only coastal shipping but the Gulf and Ohio River systems as well. This is just one state – Louisiana – domestic water flows. We have graphics like this for all 50 states prepared for 1998.

If you look at international cargo, you can see the importance of coastal shipping, which is what this panel will address this morning. Coastal shipping on both the west and the east coast and the inland waterway system is an important option for intermodal freight, particularly in some of the congested ports of entry that are going to become more congested if you consider the trade forecasts.

This is an example of international freight moving into and out of the Port of Charleston. It illustrates the relationship of water transportation connecting to the inland gathering and distribution system of highways and railroads. This happens to be the Port of Jacksonville. Again, this kind of imagery is all contained on the CD-ROM. We've mapped the largest international ports of entry rail flows, as well as highway flows. We've mapped the 30 largest BEA regions, all 50 states, and we're working on air freight facilities right now. All of that should be completed within the next two weeks – right after the Thanksgiving holiday.

Gateways are a critical interest in the United States economy. They connect the U.S. to our NAFTA trade partners and to the rest of the world. They are critical to the future viability and functionality of the intermodal freight system. Our ability to map these things is an essential building block for a comprehensive analytical system to better understand the system, its interrelationships and investment options. We are now working with Canada and Mexico to extend this capability throughout North America. This capability will allow us to graphically illustrate the importance of gateways and long distance trade corridors, and will also allow us to engage in transport development discussions more fully with our NAFTA partners than we have had the opportunity to in the past. This comprehensive data and analytical capability is the technical challenge that I will discuss today – building a multi-modal investment performance system and a strategic planning analysis network to inform decision-makers at all levels.

By the way, gateways will likely be one of the major program areas that we will emphasize in reauthorization because of tremendous population growth as well as the trade growth that are going to impact our gateways. Gateways tend to be a free rider problem, as an economist would describe it. The costs of international trade are borne locally, but the benefits are widely distributed throughout the country of North America. It makes it problematic to invest in gateways because of this distribution of benefits and costs. But, there are ways we can address that.

This schematic diagram is a wonderful illustration for governors and state DOT officials. This slide compares the value of a specific sector of international trade – not all trade. This is the merchandise sector, but it illustrates very well the rapid growth and importance of trade in the U.S. and world commerce. The U.S. has traditionally not been an international trading nation, but as you can see from the green bars, we have dramatically increased from 1970 to 1997. If you look at our trade forecasts produced by WEFA (the Wharton Econometric Forecasting Group), U.S. trade as a share of GDP is expected to increase to as much as 35% by the year 2020, and a great deal of that will be waterborne commerce.

Globalization is a theme that concerns many groups concerned with labor issues, environmental issues, and cultural issues. But globalization is a phenomenon that is likely to continue. The market demands it and trade provides economic opportunities that would simply be absent without globalization. Our ability to understand the transportation implications of globalization and sourcing changes, and our ability to explain these changes and their applications to decision-makers is absolutely critical. Currently, we do not have the tools to do this, and we need to develop them.

I mentioned our WEFA forecast – WEFA looks at rest of world, looks at NAFTA, looks at domestic freight and comes up with trade forecasts for 2010 and 2020. As you can see, cumulative we are expecting about a doubling in trade flow between now and 2020, with a disproportionate increase in international trade.

This graphic always gives state DOT directors cause for concern. This is the delta, or change, between 1998 and 2020 for commercial truck traffic – not including rail and waterway. Look at that degree of density. This is particularly interesting to waterborne interest groups. This is overseas inland trade, truck traffic coming in through our major ports. Look at the major corridors illustrated by a graphic like this. In our trade with Canada, the largest crossing between the U.S. and Canada is the Ambassador Bridge in Detroit. It carries more trade value than the entire U.S./Mexican border.

The most highly congested highway in North America is the 401 in Ontario, the trade corridor between Toronto and Detroit and extending over to Chicago. It carries 400,000 vehicles per day and is the most significant trade corridor in the entire world. The trading relationship between Ontario and Michigan is the largest trading relationship by value of any two political jurisdictions in the world.

Canada trades with the U.S. 39 times more than it does with Japan, its second largest trading partner. September 11th has resulted in a tremendous hit on the Canadian economy. Trucking has rebounded, but companies are changing their sourcing patterns, JIT levels, and holding more inventory in anticipation of potential future disruptions. Auto traffic across the U.S./Canadian border since September 11th is down 35%. Developing an analytical system to assess options for facilitating trade across the board, while providing for national security, is another essential element of an analytical process that we will talk about today.

This is U.S./Mexico truck traffic on the U.S. network in the year 2020. Mexico is our number two trading partner. Free trade in the Americas will further spur Latin American trade and growth in traffic. For both Mexico and the areas typically noted in a discussion of a Free Trade of the Americas area, the Gulf ports are extremely important components in supporting that growth. SASHTO (the Southeastern Association of State Highway and Transportation Officials) recently completed phase one of what is called the LATTS study (Latin American Trade & Transportation. The study assesses the Gulf ports and the Florida ports, looking at their capacity for accommodating expected Latin American trade.

The network is dense and well developed, but it is showing signs of stress. Between 1978 and 1990, the ratio of highway travel demand to new lane miles of capacity on our highway system was about 12 to 1. As a result, we are seeing increasing traffic density in are sizes of cities, particularly larger urbanized areas, and particularly on highway types of highway, our limited access facilities. Rails cannot cover their cost of capital, resulting in branch line abandonments and rail mergers. Rails reinvest about 20% of after-tax revenues, compared to about 5% as the nation's average. They are doing a good job of trying to maintain plant and equipment, but they simply are not obtaining enough revenues to cover their cost of capital.

Regarding ports, NAFTA trade is increasing and there is a lot stress on border crossings. There are very poor intermodal connections. We completed an assessment of the National Highway System freight connectors in December 2000. The port connectors across the board show pavement conditions that are roughly twice as bad on the rest of the NHS. Most of those connectors are located in older, mixed-up industrial areas and port complexes and carry primarily truck traffic, with little non-commercial traffic.

There is a lack of interoperability across modes and, among the NAFTA partners, EDI systems are stovepiped. The U.S. just reached an agreement with Canada and Mexico to develop a tri-national ITS freight architecture to help overcome this problem. As a result of the events of September 11th, trade facilitation is now pitted against national security. If you just look at one of the port gateways, the San Pedro ports of Los Angeles and Long Beach, they expect to see a quadrupling of freight flow by the year 2020 and over that same timeframe and geographic area, they expect to add a population component equivalent to three cities the size of Chicago. The challenges of moving that much freight in a highly congested and environmentally sensitive region will be enormous.

How are we dealing with these stresses? Well, not very well. Freight and intermodalism are tough for the federal 3-C transportation planning process, which has been in place since the mid-1960's. It is a wonderful planning process for developing systems. It is not a very good planning process for responding to operational changes and shorter and shorter range decision making. The time horizon differential between the public and private sector is something we will address in reauthorization.

We talk a lot about intermodalism, but we don't provide the technical assistance to the states and MPOs. It is very tough to get intermodal funding for projects involving waterways or rails out of the highway trust fund. We have made some inroads in that direction, through redefinition and interpretation of eligibility, and we will continue to make some more. Part of the reason is that we don't have the ability to think or analyze beyond our modal stovepipes. We tell the states and the MPOs to think and act intermodally, but we give them very little direction on how to do that. We won't be able to chart an effective intermodal course to the future until we can define what we have – how well is the intermodal system performing? We need to be able to define the relationship between past and future investments in performance, and be able to tell Congress…. you gave us money and this is what we did with the money, and this is how the performance changed. We need to be able to relate investment to transport performance and transport performance to national well-being.

I've dealt with Office of Management and Budget and have good friends over there, and the OMB has been focused on balancing the budget throughout the entire decade of the 90's. It is very difficult for them to differentiate between current spending and investment strategies. To them, a dollar is a dollar. Occasionally, our role at DOT in supporting economic growth and trade and productivity is questioned. I expect it is hard for people in this room to believe, but that is the point of view of some members of the budget community. An expanded ability to relate our budgets to national economic well-being is essential as we work cooperatively to compete for limited public resources. We have been working in that direction for some time within the highway community, and the marine community is investigating how to do the same on the waterside. That is a tremendous step in the right direction.

Second, we need to define the necessary coordination of parallel initiatives with trade facilitation and national security. It is one thing to build infrastructure to our ports and to our border crossings, but if it is not well coordinated with Customs and GSA and INS and the other trade facilitation agencies, then we have simply substituted one roadblock for another. More specifically, we need to be prepared to describe the performance characteristics and their changes, not by mode, but across the entire system. This is something the European Union is working on with some success.

We have to be prepared to describe the relationship between public and private capital and operating investment and system performance by mode and across mode. That is what an investment performance system is all about. To do that, we need to begin developing – and this is my challenge for you today – a multi-modal investment performance system to help understand and address these questions.

This is an example of the beginnings of an investment performance system, looking at the highway system. I showed you the demand maps. This is an overlay of demand with capacity. This shows the highway segments that have traffic volumes greater than 100,000 vehicles per day, and truck volumes greater than 10,000 vehicles per day. Having this kind of capability allows one to map demand against capacity, define potential choke points, begin to look at intermodal rail and water options to mitigate these problems, assess the benefit cost of alternative actions, and then coordinate the development of multi-jurisdictional approaches to program improvements in a logical and consistent manner.

A multi-modal investment performance system (MMIPS) can find not only where existing problems are, but where problems might be developing. VSF is volume to service flow. It is the old V/C ratio that some of you may be familiar with. A VSF of greater than one theoretically is at capacity. A VSF of 0.8 to 1.0 is like a shadow on your x-rays when you go to the doctor. It is a problem that is developing and we need to begin worrying about it. The reason is that increasingly a lot of U.S. trade is high value-added – it is very time-sensitive trade. When you get to a VSF of .8 to 1.0, system reliability begins to diminish dramatically. When you don't have good system reliability, shippers have to hold more inventory as a buffer against a system breakdown.

Detroit, Michigan and Windsor, Ontario are the home of the U.S./Canadian auto industry. A lot of parts shipments go back and forth across the border into assembly plants of the "Big Three".

One of the "Big Three" charges drayage operators crossing the border $5,000 per minute for delay – each truck, $5,000 per minute. That is the degree of reliability that is expected from their supporting transportation system. MMIPS can allow you to begin relating changes in your system performance to what you need.

Today's technical challenge is to establish the need or framework for an integrated North American freight data and analytical capability. We need to begin thinking through the pieces that we need to link together or begin developing, that will allow us to move toward the concept of a multi-modal investment performance system. The ICMTS is moving in that direction. They are actually letting a statement of work to develop a needs capability for the maritime industry. That is a huge step in the right direction.

There is a group called MAROPS – the Mid-Atlantic Rail Operations program, which involves CSX, Norfolk Southern and Amtrak, with several state DOTs. It is a wonderful partnership looking at identifying choke points in the Mid-Atlantic area for rail. We are beginning to think through how the railroads could provide an information system that would allow them and us, in cooperation, to define those choke points and investment options and trade-offs. This is a big step for the railroads since they are privately owned.

FHWA and the Federal Transit Administration had been moving in this direction for several years with the combined Conditions and Performance Report. There is a group set up by U.S. Customs called the Border Station Partnership Council, which includes all the Federal Inspection Services, FHWA, and Federal Motor Carrier Safety Administration. That group is sponsoring the development of Border Wizard, which allows us to look at the relationship between transportation connections in port of entry operations. We currently have an operating model that can be used to simulate movement at land crossings with Mexico and Canada. We are just now beginning to develop a Canadian version of this. By the end of 2001, we will have the capability at three locations – Blaine on the Pac Highway between Washington and British Columbia, Champlain on I-87 south from Montreal, and Ambassador Bridge in Detroit – to display a port of entry showing the current customs and immigration practices and procedures of the U.S. going northbound and Canada coming southbound. We will have an integrated tool that enables those federal inspection services on both sides of the border and the transportation agencies that build and operate the infrastructure connecting the port of entry, to look at investment strategies, operating strategies, and personnel strategies to improve that port of entry. It would not take much to adapt that to a marine environment. Then we would begin having a true multi-modal investment performance strategy.

System analysis isn't only about modal and intermodal investment. Given a trade corridor, a system like this can help define which corridors and gateways are most critical and are of most regional and national significance. It can help you talk about what is the most effective modal balance. It can help you talk about what sort of trade facilitation facilities need to be provided for Customs, trade, security, cargo and passenger inspection and clearance. When I talked to RADM Bob North (USCG) about this last year, he immediately understood how this would enable him to calculate resource requirements for each port of entry, cutters, aids to navigation, so on. You would be able to define the magnitude of demand at a port of entry and translate that

demand into support services – whether it is personnel, aids to navigation, dredging, you name it. All that capability could be built into this.

Other building blocks include the highway marginal benefit cost procedure that we use to estimate needs for U.S. Congress. I mentioned that MARAD and Coast Guard are now letting a contract to look at an investment performance system for waterways. I also want to mention that the Mexican Transport Institute, with whom we met in Brownsville in September to talk about the development of this capability between the U.S. and Mexico. Mexico has an enormous analytical capacity that we have not yet accessed, including land, rail and water. Last week I was in Toronto talking to the Canadians about the same thing.

On the policy side, there are also tools that can help us understand the problem that we face in the future. Understanding the problem can help us define the strategy. The strategy can help us define the program needs. The program needs can be conveyed through common message sets. Then the message sets can be orchestrated to convey consistency, comprehensiveness and coordination to the U.S. Congress – a very persuasive method.

The other challenge I would like to leave with you today is policy coordination. I believe we must coordinate message development for freight productivity and national security. In all cases, our legitimate needs by any modal definition exceed available revenues. Cannibalizing one mode, pitting one against another, or borrowing from Peter to pay Paul simply won't get the job done. We need to go to Congress in tandem, in a cooperative arrangement, to offer options and solutions, not simply a litany of problems. I think it is important for us to develop common message sets for all modes and all interest groups. We have talked in terms of single modes for too long. We have talked about the highway mode. We have talked about the water mode and all the other individual modes. With budget constraints and widespread needs and a Congress faced with competing demands and pervasive national concern for safety and security, we can no longer afford to talk about individual modes in isolation. We must talk about how we can use all of our skills and national resources to meet the challenges of trade and security across the entire transportation system.

In summary, we need a comprehensive data analysis system, a multi-modal investment performance system linked to related transportation support tools, and a strategic planning analysis network that will allow us to begin thinking intermodally. With these tools, we can develop common message sets to deliver a coordinated and comprehensive message. Intermodal trade transport is an investment in the nation's future, and essential for economic growth and continental security.

Something I keep in mind all the time is that "leaders do the right thing; managers do the thing right". We need both – those who can point the way and those who can plot the course. This group is key in helping make that happen.

Thank you.

PANEL 5: COASTWISE TRANSPORTATION

Moderator: Paul Bea, Port Authority of New York and New Jersey

One of the reasons I was asked to organize this panel is my involvement with an organization called the Coastwise Coalition. This organization of individuals and entities, governmental and other, including private sector, is interested in the possibilities for the development and greater use of the coastwise mode for moving freight, as well as passengers, in the years ahead.

The theme of the conference is the needs of the MTS. The name of this panel is Coastwise Transportation. Pretending to be a literalist for the moment, I take it that our conference organizers concluded in advance that coastwise transportation is a need of our marine transportation system. That leaves the question why, what, and how. Are we talking about coastwise transportation status quo, or do we contemplate its grand potential? Judging by my choice of words and the fact that we are sitting here on an otherwise delightful Friday, it is obvious that the latter inspires our interest. Here is a short answer to those questions – the how, the why, and the what. The longer response will be offered by our panelists.

The MTS has a critical role to play in helping to close the overall gap between growing transportation demand and the capacity of our transportation infrastructure. Consider these facts: in April of last year, the National Defense Transportation Association's Military Sealift Committee released a report entitled *Maritime Policy Initiatives 2000*, identifying major issues facing the U.S. maritime industry and opportunities for strengthening the industry commercially. One opportunity is coastwise trade. The NDTA analysis found there to be particularly strong growth potential in the market, especially along the I-95, I-10 and I-5 corridors, which you've seen on the charts that Harry presented earlier. In these coastal corridors in particular, there is strong evidence of a capacity crunch. The Federal Highway Administration data indicate average annual increases in highway freight miles of 3-4% nationally. This will represent a 30-40% growth rate by 2010.

Existing rail and highway infrastructure cannot handle all of this projected growth. There are obvious limits to how much we can increase the capacity of interstates and rail lines. The waterborne option, on contrast, has underutilized capacity. As vessel and cargo transfer technologies improve and new vessels such as freight ferries come into service, waterborne transportation will provide increasingly competitive service.

I do not view the expanded use of waterborne transportation options as modal competition. On the contrary, I view the MTS initiative as part of the cooperative transportation effort to maximize choice and provide a logical alternative to an impending transportation overload.

That was a long quote and an easy part of my introduction. Since those words are the words of the Secretary of Transportation, who are we to disagree. Given Harry's presentation, the imperative to address the need for greater freight capacity is indisputable. The role of the blue highways, if you will, in adding capacity is easy to appreciate. I will now introduce the panel.

Bill Ellis is Program Manager at the Port Authority of New York and New Jersey, in our port planning and development section. Bill has a B.S. and a B.A. degree in Industrial Engineering and Business Administration from Rutgers, and an M.S. in Management Science from Lehigh. He has worked in various planning, operating and policy positions relating to transportation, property management and business development during his 28 year career with the Port Authority. As a fellow member of the Port Authority, I can attest to the fact that behind his quiet engineering façade, Bill is an irrepressible entrepreneur.

James Wang is Executive Director of the Greater Bridgeport Regional Planning Agency. He has been there since 1980. Before that, he was Director of Planning for the Lexington Fayette Urban County Government in Kentucky. Before that, he was City County Planner for Dauphin and Whitfield Planning Commission in Georgia. James is a member of the American Institute of Certified Planners, the American Planning Association, and the Institute of Transportation Engineers.

Anatoly Hochstein is Director and Professor of the National Ports and Waterways Institute, associated with the University of New Orleans. He has a prominent career of over 25 years in the field of water transportation and is recognized as one of the leading experts in ports and waterways planning. His expertise encompasses diversified disciplines ranging from analysis of trade shipping patterns and institutional and managerial frameworks to feed operations and preliminary feasibility of structural and non-structural waterway improvements. Anatoly has been responsible for a variety of important water transportation research projects worldwide and thus has an intimate knowledge of the international maritime transportation industry operating in different geographic and economic situations.

John Ricklefs has degrees from Kansas State University and Columbia, in Architecture, Economics and Regional Economics. He has over 36 years of experience in the planning, financial and development of major transportation infrastructure projects the world over. Mr. Ricklefs has guided the development of projects in 27 countries, including those funded by the OECD, the World Bank, and other international agencies. His most recent work is focused on the privatization of the Port of Singapore Authority, and major expansion programs for the Port of Hong Kong and the Port of Los Angeles, the development of an investment plan for the Port Authority of New York and New Jersey and the Millennium Port Development Program for the Port of New Orleans. He is currently heading up the Port of New York and New Jersey's inland distribution network project, working with Bill Ellis. John has authored articles and books on economics of technological change, in addition to numerous publications and papers concerning technology, transportation, trade and economic development.

Our final speaker will be Marc Stanley, who will talk about the vessel side of this concept. Marc is Executive Vice President of Bollinger Shipyard for government and international affairs. He is based on Washington. He was formerly General Manager and credited with bringing government and high speed shipbuilding to Bollinger. According to Mark, over the last 20 years, Bollinger has built over 75% of all high-speed vessels.

Bill Ellis, Port Authority of New York and New Jersey

(NOTE: He was not speaking into the microphone at the beginning of his presentation, so some material could not be transcribed.)

Harry has appropriately identified some real, pressing problems for the nation as illustrated on the various graphs and flowcharts. Projected demand is significant. We don't necessarily have the capacity to enable that economic activity to occur, and that is a big fear. Perhaps we would not get that level of projected opportunity unless we provide that capacity. It is clearly the sense among all of us that the additional highway based freight movement system is not one we can depend on to move those flows in 2020. The multi-modal performance system that Harry spoke about is a tremendous strategy, with many elements. Is there hope for the future?

I would like to talk about one of our examples, the Port Inland Distribution Network, which would fit within the context of this multi-modal performance system – specifically the coastal, the water-based, the MTS initiative to try to add capacity to facilitate and enable economic growth to occur in the nation.

The region of the country that the Port of New York and New Jersey principally serves includes what we call dense trade clusters where large concentrations of containers flow through our port to cities and metropolitan areas around the northeast. In our port inland distribution network, we envision a mass freight transit delivery system from our hub port – what we might call a relay system -- to port cities up and down the coast and up the Hudson River to places like Albany. It also includes rail delivery to inland destinations not currently served out of the Port of New York by rail. As mentioned in an earlier presentation, rail tends to be more of a long-haul type solution for freight rather than a short-haul solution.

Our reasons for taking this approach are similar to the issues regarding projected growth rates. We handled about three million 20-foot equivalent units (TEUs) last year. That is projected to double by 2020. Beyond that are the projections to 2040. We're not only concerned about the Port's ability to handle that trade on our platform; even if we solve that problem, how do we get it out through the network and into the inland destinations with the congested roadways. There is a variety of issues associated with port development, whether it is creation of terminals in constrained metropolitan areas or the modal split. We are so truck dominant right now that it is very inexpensive to move 400 miles by truck. It beats rail and barge almost hands-down. But, there are environmental impacts associated with a doubling, tripling and quadrupling of trade. Most ports are not making a lot of money. It is not a very lucrative business and, in some cases, is supported by states to achieve economic development goals and benefits. However, as the costs of developing terminals go up, how will ports be able to sustain themselves in the future?

There is also a "Catch 22" – if we don't build the capacity in our port, we will lose that market share. If we do build it, we will go broke. So, what do we do? We realize we have to think about this whole problem differently than just the traditional landlord port. A landlord port develops facilities and rents them out to others to operate. The PANYNJ is not an operating port -- we are not in the business of handling cargo. We provide the facilities or the infrastructure to

facilitate the handling of cargo. We recognize that to determine what our future role as an organization should be to help overcome or influence these pressing challenges, we have to step outside of the box, think more broadly, and better understand what is involved in this business.

We have set out a number of benefits or goals for this project. If, in fact, we could move large amounts of containers that are currently moving out of our port by truck, by barge and/or train systems, it would a significant benefit. We think there is an opportunity for about half of our containers to move on such systems. There are also benefits that accrue in terms of costs, environmental benefits, capacity, and economic development. One significant outcome or potential for such a system is sharing the growth and the wealth and the economic opportunity with other ports in the region. This would be a sort of regionalization in the handling of the trade and overcoming capacity constraints – making better use of the resources we have throughout the region.

The PANYNJ has a GIS database that shows from PIERS (the Journal of Commerce's Port Import and Export Reporting System), the Customs data for our port of entry. It shows the origins and destinations of every container that moved through to the United States to 17 eastern and Midwest states. These data show the densification up and down the I-95 corridor and in the Midwest. These can be plotted into maps shown earlier by Harry to show all the network lines that connect them together. We look forward to getting some of FHWA's CD-ROMs and charts and matching up these data. We've done some of our own connections and it has been very helpful in understanding what the opportunities are.

A graphic representation of those containers on the basis of distance from the port shows a bi-modal distribution of the high densification of containers destined within 75 miles of the port for the suburban metropolitan New York area, and then 200-300 miles beyond those destinations to other metropolitan centers that serve as distribution centers for those areas. There is a large volume of trade that is 200-300 miles out and there is the potential of getting some economies of freight movement systems by barge or rail at those distances or beyond.

We looked at each of the locations in the United States within the region we serve and found surprisingly that we only have about a 33% market share of containers coming through our port to those inland destinations. The trade is basically shared by many different ports and it doesn't even matter where it is coming from – whether it is Europe or Asia. Trade comes from all different parts of the world through all different ports and it is the nature of shipping lines and the shippers to have choices and flexibility and they don't want to be locked into any one path. Many times they don't always route their cargo along the lowest cost path. Issues such as time and delivery affect those decisions.

We have identified some success strategies that are necessary to make this closer-in inland distribution mass freight, rail or barge system work. We've got to develop some very innovative structural relationships between the entities, both public and private, that are involved in this process. There are many entities and the relationships are complex. We haven't collaborated well on this in the past. We have to use new technology to the greatest extent possible to add value to the services that we're offering, but also to drive down the costs. Fundamentally, this is not happening now because the truck is cheaper and faster. With technology, we have the

opportunity to drive cost elements out of the barge and rail system, enabling us to achieve some economies and provide a greater customer value.

The other great revelation of all this is the tremendous public benefits that can be accrued by moving freight over barge and rail systems in terms of air quality, congestion mitigation, and creation of highway capacity. We also envision this to be an opportunity to look at public/private partnerships and doing something the private sector can't do alone, or the public sector couldn't appropriately do alone. Partnerships can create benefits both for the private and public sectors at the same time.

This chart shows the mainline stream of the relay of a container from overseas, hub port relayed to a feeder port, either trucked to an inland destination or dock, warehousing distribution from the port. The concept is to have two port authorities at either end collaborating to put this system in place in the form of a coalition and replicating the types of agreements and relationships at each of the different ports that are destinations. There will be some role for the federal and state governments to help get this system up and running in the form of recognizing the public benefits that would be created. There are various types of relationships, ranging from contract services that are performed to federal agencies – there are many different parties. Each party may now play a different role than they have in the past by participating in this new system of relationships to accomplish the goals I've outlined.

Technology is an important part of all this; specifically the ability to track and understand the status of the freight movement. Karen Tobia earlier described the FIRST (Freight Information Real-time System for Transport). It is a one-stop shopping for port information and we have envisioned using that as a technology for our inland distribution system as well.

Another fundamental technology that is not widely employed and perhaps not employed at all in the U.S. but widely employed in Europe is the concept of a high-density inland regional terminal on the water, shown as a conceptual drawing of the ship, the crane and the warehouse. A tremendous technology economic advantage could be achieved unloading a barge with the same piece of equipment that you use to manage the yard, load the yard. That same piece of equipment might also be used to deliver a container right to a warehouse without an inland truck dray, saving hundreds of dollars for those customers who want to take advantage of that option. There are a variety of other advantages as well, having to do with heavy weight containers. Some of you may be familiar with the weight restrictions on the highway of 20 tons of cargo in a container versus 30 tons – the structural capacity.

Looking at the economics, it is difficult to make a sociological change, and it is not just the technological issue putting this system in place. It is the natural resistance to change and the fundamental drive of economics that the shipping industry focuses on so much. In our design of the new system, we are very careful to understand what the current trucking cost to inland destinations through the port is versus what might they be or what do they have to be by barge or rail to provide an economic advantage to users. We then determine how to achieve that. There are many different cost elements and challenges associated with each one and we have to work together to get down to the best set of offerings.

In any change, we're growing a new business and that is what we are talking about – starting up a new business. You can't expect to immediately tap into all the opportunity that may be out there. It takes some time for people to change, for services to prove their worthiness, reliability, and quality, and for the volume to grow. A truck only needs one box to be efficient, but a barge or a rail system needs many boxes – 50-80% utilization to start to get the kind of economics that would enable those systems to compete with the truck. After some years of operation -- and it depends very much on the inland destination – each one of them has very different characteristics in terms of size of the market and the mix of imports and exports. Ultimately, we believe these mass freight systems can be financially viable. It is the start-up period that has kept the private sector from going into it.

John will speak in more detail about customer values later; however, the benefits of the MTS in an all-water service is that those inland ports will bring the containers closer to the customer. Empty chassis availability offers potential economic advantages other than just delivery-related advantages.

Another basic strategy is making this service more than just a liner transportation service. It is an added value logistics service and all the other opportunities that we could take advantage of – things like the all-water service, the overweight, and combining with warehousing -- will entice people to put their boxes on our barges.

There are three principal public benefits I want to mention. Highway construction cost avoidance – we estimate that we can provide almost the same equivalent freight movement capacity as a highway for about one-third of the capital investment cost. We also anticipate that at near full utilization, these rail and barge systems can produce transportation cost savings to consumers and carriers. There is also the economic development benefit in the regional feeder terminals in terms of jobs, payroll taxes, warehousing activities, and substantial economic development opportunities for the states involved.

I also want to point out that reduction of vehicle miles traveled by trucks is significant and, for the region, can be cut almost in half for the entire regional truck-trip miles. This means tremendous environmental benefit, not to mention the congestion mitigation. We are in the process of working through the exact quantification, based on assumptions of market capture rate, of how much of an environmental benefit could accrue from such a system. In fact, we would hope that from a national energy or environmental policy perspective that some type of air emissions credits system could be established for systems like this. Right now, we have emissions credits for stationary emission sources, but not for mobile source emissions. It would again help change the economics to encourage these things.

Regarding congestion mitigation, there are calculations for different locations up the I-95 corridor. For the water route we envision, we have made computations on the freight flow to estimate what the equivalent highway capacity would be. We believe the water system can create the equivalent freight movement capacity for about one-third of the cost of the highway construction.

Lastly, we anticipate local benefits for the hub port and expect that with a wide implementation of this type of system of rail and barge, benefits will also accrue to those locations identified. We are working fervently with many locations, such as Bridgeport, to put systems in place that would enable us to improve the throughput of our own terminals so we don't have to build on additional acres -- acres that are not available, hence we would have to create them at tremendous expense. We would get better throughput as the container boxes would dwell on the port much less time if they were moved out by rail or barge systems and then by the traditional truck system. Think of the gate congestion that we would be reducing – hence, a benefit for truckers in a variety of ways.

We are in the process of planning the system. We think it will take 2-5 years to start the services up – not at every location, but probably 2-3 barge ports and one or two rail locations. We will then build on those successes and expand to new inland destinations, perhaps bus stops along those routes that we described as interim locations. For example, if we were to establish the route to Albany or perhaps Newburg, New York -- a tremendous distribution area on the Hudson -- could be a bus stop along the way. In effect, this replicates the models that exist in Europe, where there are many inland ports in the riverway system.

Thank you.

James T. Wang, Greater Bridgeport Regional Planning Agency, Connecticut

My assignment is to talk about what it takes to put together a container feeder port for Bridgeport, Connecticut. I will focus on the issues, planning, funding, implementation and process, as well as the politics. The Greater Bridgeport Planning Agency is a metropolitan planning organization responsible for the planning process and the getting the funding to implement this project. For any questions relating to project design, I will refer you to my consultant, Fred Sherman from Management and Transportation Associates. They are helping us put this program and project together.

Bill already explained the process the Port Inland Distribution Network (PIDN) - the PANYNJ identified Bridgeport as one of the feeder ports for their system. Bridgeport is about 52 miles from New York on I-95, and about 70 miles by water from the New York and New Jersey harbor. As you know, the I-95 Corridor is over-capacity because right now we have average daily traffic on the expressway of about 150,000 vehicles in Bridgeport. We also have about 17,000 trucks on the I-95 every day. As you may also know, the region's rail freight transportation services are limited. As Bill indicated, the New York/New Jersey ports are congested; however, the Bridgeport Harbor is underutilized because we do not have much activity other than minimum cargo as well as ferry services.

Bridgeport is an ideal location for the proposed container feeder port. It is next to the shipping lines and has easy access to I-95 interchanges. State has spent about $400 million to improve the I-95 around the interchanges connected to the harbor, so we are ready to provide such services. Another advantage is that the City of Bridgeport is the only municipal port authority in Connecticut and they own most of the lands around the harbor. The location also has potential as

a regional distribution center. The site includes the ferry operation on the left and the proposed site for containers on the right. The highway, Seaview Avenue, connection extends all the way going to a proposed 400 acres industrial park. In the middle of the highway is a proposed staging area for the proposed container feeder port.

I should first summarize the planning phase. The project goal and scopes were formulated by the Greater Bridgeport Regional Planning Agency in July 2000. We received local and regional endorsement for the proposed project by August of 2000. We obtained funding from the FHWA for the marketing study and the feasibility study. We then established a steering committee to support this entire effort. This group included representatives of the City of Bridgeport, the Connecticut Department of Transportation, the Bridgeport Port Authority, the Port Authority of New York and New Jersey, the New York Metropolitan Transportation Council, FHWA, and the Connecticut Trucking Association. The marketing and feasibility study was completed in January 2001.

One of the major issues when we are working on the PANYNJ was regarding the roll-on/roll-off operation and a 5-day week service from Monday through Friday, which would be different from Bill's concept of the current lift-on/lift-off operation. Basically we are recommending this alternative approach for Bridgeport harbor and New York/New Jersey ports. In addition, our consultant suggests bringing in the barge ramps and the appropriate type of barge and handling equipment. We are projecting 60-90 containers per day for the cargo and they project 150,000 to 200,000 annual containers each way.

Another issue is the operation cost difference among the lift-on/lift-off, roll-on/roll-off or the truck only. We probably have a somewhat different opinion of the cost. The reason we are using this comparison is to justify our limited funding. We hope to be able to reduce operating costs and avoid the other capital improvements or expenditures; hence, we are illustrating how the roll-on/roll-off would be more beneficial from our point of view.

We estimate about $5.6 million for the proposed capital improvements. We have received approval from the State of Connecticut General Assembly and should be able to receive this amount of funding for the capital improvements only. We may need some other costs for the operation.

The general conclusion from the study was who would be economically and technically liable for this type of services and operation. We discussed this with the Department of Transportation as well as the FHWA, and they viewed the service environmentally friendly. A principal benefit is the elimination of some truck traffic on I-95, one of our main concerns. We also will be able to reduce highway congestion and improve safety. Eliminating some of the trucks off I-95 is also beneficial as far as air quality is concerned. From the City of Bridgeport point of view, we will be able to create more jobs for the region.

We are working right now on the implementation phase. We just finished the public involvement process. We are working with the City of Bridgeport and the Planning and Zoning Commission as well as the Department of Environmental Protection for the permits and other processes.

We also have to convince the FHWA to provide funding in the future to support this proposed operation. As I indicated, we should obtain $5.6 million in funding from the State of Connecticut General Assembly. We would like to use FHWA's CMAQ funding as a backup in case we need some operating subsidy in the operation and other purposes. Currently, we are working with Bill Ellis and his office on the operating plan. Basically, we emphasize improvement of the operations of the port facilities - the Bridgeport Port Authority, as well as the PANYNJ, facility improvements for the site and for the capital improvement. There are also some labor and union issues. We also have to prepare environmental impact documentation and environmental permits. We hope to finish the plan by the end of this year and it will be submitted to the Connecticut Department of Transportation of Connecticut as well as the FHWA. We hope to implement these services within the next year.

Thank you.

Anatoly Hochstein, National Institute of Ports and Waterways

For the last two years I have had the opportunity to work on a significant concept which, if implemented, would be direct the onset to heavy change. It would significantly increase the volume and functions of domestic water transportation, relieve congestion on the highways, and provide much higher flexibility to the entire system, providing another element of security for the system. We also realize that if land transportation is interrupted, it is important to have an alternate transportation system that can duplicate at certain times -- this is an option.

We do have a viable coastal transportation in a variety of forms. However, one element is missing from all these forms and that is ability to accommodate domestic trailer and container movements requiring a very significant expansion into domestic freight transportation system.

Our concept is to address the domestic old type of freight transportation, domestic international containers, oversize containers and so forth, based on high speed ro/ro type of vessels, with the speeds that make them compatible and competitive with traditional domestic land transportation by trucks. It is also based on the additional element of domestic ports – not international ports or expensive, high technology ports -- but ports outside of international ports with fewer requirements and considerably lower costs. The goal is to provide this major element not to compete with trucking, but to provide the truck sector with the opportunity to deliver their goods with the same frequency and the same delivery time, which is based on daily frequency and multi-port calls.

There are two elements: vessels and ports. With respect to the vessel element, we associate and receive direct input from several well-known shipyards, based on technology developed mostly in Australia. The developers have now they come to the United States and developed joint ventures. These vessels are quite innovative and are of two types -- ??? and ???. All of them are relatively small vessels with a capacity of between 30-70 trailers, with speeds up to 40 knots, and they cost in the range of $60 million. Hopefully, as this craft is further developed and is produced in larger numbers, these costs might be reduced.

This new technology and the ability to have fast-moving vessels is a major element in making the coastal system viable, because people often ask if such a system is viable, why has it not been introduced? Two factors – increasing congestion on highways and availability of new technology -- provide hope that the system will, in fact, be introduced.

The second element is ports. Again, the idea is that some kind of domestic port outside of the fences and Customs areas of international ports would be developed. This is where domestic freight movements can enter and leave easily – a terminal designed for domestic container movements. I would emphasize that the domestic terminals would be exceptionally simple terminals. It may include a 400' by 400' parking lot with no need for equipment and Customs or any other type of inspection organization and the related costs. A major element and the most expensive element of this system is a ramp. There is such a ramp operation in the in the Canary Islands that provides three lanes from the vessel, which make loads and unloads extremely fast. Vessels can turn around in this terminal in about half an hour.

When the entire system is implemented, it would be quite extensive. It would go through the Gulf and providing a type of hubs and spokes similar to our maritime system for an overall maritime system. When trailers would be accommodated on short distances, which is most extensive in the high density areas, and then distributed by another type of vessel on the longer distances.

The Port Authority of New York and New Jersey cooperated with us to provide specific and practical examples of the type of terminal that can be created under their jurisdictions. The head office was kind enough to provide information on the density of truck movement in these adjacent areas. It was very preliminary and illustrated the density of this traffic to Portland (ME), Portland to Boston, and Boston to New York and provided us with assurance that daily frequency is quite achievable. Delivery time is comparable with direct delivery by trucks.

Again, I want to emphasize that in no way can we compete with the trucking industry, but rather we provide the trucking industry with additional service. Therefore, the major beneficiary of this system should be the trucking industry.

The system is economically viable, at least in our preliminary calculation. However, I would say that it can be implemented only if some barriers can be overcome. First, the system needs to be developed as a system. It is not enough to build this terminal at one place and not enough to have one vessel. There is a need to develop the entire coastal system and this requires participation of many interests.

More importantly is the aspect of institutional data; specifically, our inability to credit one mode of transportation versus another mode of transportation by so-called external costs. Major savings can accrue with the introduction of the system as congestion is reduced on the highway system and as new investment extends over time. It is sometimes difficult to relate to these two factors.

There are also environmental aspects – safety, air pollution, noise pollution – that favor such a system; however, we do not have the ability to translate it from one system to another. There is

an interesting example here of what is going on in Western Europe. In a way, Western Europe shows us our future, because their highway systems are considerably more congested than ours and their ability to expand the highway system capacity is less than ours. However, I'm sure that if our projections are correct, in about 10 years we would arrive at the situation that now exists in Western Europe.

It is interesting what kind of measures have been taken by the European Union. Most recently, a white paper was issued with proposals now under consideration and likely to be introduced, to reflect user charges for highway system that include all these external costs – environmental safety, noise pollution, and so forth. The overall costs on highways for trucks will increase at least by 50% or maybe more. In addition to that, they have more or less demolished the approach based on existing different modes of transportation. Instead of having transportation highway trusts and water transportation trusts and so on, they contemplate having one transportation trust and allocating money to so-called environmentally friendly modes of transportation.

As a result of previous policy, coastal traffic -- mostly short sea traffic in Western Europe -- is 40% of the total freight traffic, which is comparable with highway traffic in Europe. In the future, water transportation is likely to increase at a faster pace.

Unless the U.S. has some kind of similar system, this very promising concept of coastal shipping is unlikely to be developed just based on differential costs between modes of transportation that exist now. The promise is great. If it reduces congestion on coastal arteries, which is absolutely necessary, but it also provides for seagoing personnel. We know that the nation has a dire need to maintain some kind of expertise and ability to operate vessels under the U.S. flag. It gives new function to ports and to shipyards. It most certainly is of great interest to the military.

I understand that the military rented one of these vessels for trials by the Marine Corps and the Navy, for demonstration trials to define their ability to assist in different types of military operations. Once again, I emphasize that the ability of such a system would certainly increase flexibility and overall safety on the entire national transportation system.

Thank you.

John Ricklefs, Moffat Nichol

The Port Inland Distribution Network (PIDN) is about the process of change. What Bill is talking about in his discussion is a major change, and not just a technological change, but in fact, a social change. It is the decentralization of a hub port. The regionalization of a hub port is a very courageous act in the aim of sustainable growth. However, if you think that is a serious challenge -- even one that Cervantes wouldn't have given to Don Quixote – some might say they are un-American because they are taking at the truck. If there is anything that is more American than apple pie and baseball, it is trying to figure out not the trucker, but the truck – the absolute monopoly that trucks have over the system.

It is a two-fold change and I'm going to focus on a particular example, Davisville, and its functions within the PIDN system. Earlier there was discussion of the system that PIDN represents -- going from the foreign port into the relay port or the hub port which, in many a sense, becomes nothing but a relay – the container goes off and onto the barge, and into what I call the regional corridor. We have labeled it a feeder port, but is more appropriately the regional dimension of the hub port. We also have local truck and the on-dock warehousing. I want to talk about some of the functions that take place at the regional port.

One of the first functions is the issue of time. We all know that the barge out there in Long Island Sound, at best, goes 10-11 knots and the truck on the highway is clipping along, even on I-95 once it gets out of the New York metropolitan zone, at an average speed of about 45 mph. In terms of the all pervasive importance of time in international trade, how can this idea work?

In the Port of New York and New Jersey we have a dwell time of about eight days. It takes that long to inform the consignee that his box is ready, to get it through Customs, and get the payments made. It takes about eight days and at the end of that period, the trucker is going to get in the queue to get in and get his chassis or his other necessary functions taken care of. Perhaps by day 10 the shipment reaches the consignee's place of business in Davisville or in Worchester or in Framingham, one of the more intensive trading areas we have in our region.

Within the PIDN, the barge will get out by the second day and by the third day it will be at the regional port. If it's going to Albany, it will be about 12 miles from the GE plant. It is then feasible, in a very short local dray, to pick up that box. The result is a total dwell time less than what it is right now. It is all in the way you look at speed in terms of the function of time within the system.

Let me talk briefly about the management of empty containers – something that is absolutely crucial. Actually, we shouldn't be calling it empty management because, in fact, it as much about keeping containers occupied and full as it is about minimizing the length of time the container is in transit or empty. Whatever it is called, most shipping line CEOs will tell you it is a major cost. In fact, some of the lines will tell you that the repositioning of empty containers is the single most expensive cost factor that is working to deteriorate profits. This is not about repositioning them at sea, but about the inland transportation cost. Like all other cost factors, they have graduated off the sea, not even in the port anymore, but inland. The need to reposition an empty container takes time and it costs money and keeps the container out of circulation while finding a backhaul. This enters into the basic pro forma that a shipping line has when comparing the number of containers it has to maintain in order to service the slot capacity of the shipping line itself. It is a basic cost pro forma in all shipping, even more than the imbalance and changes in the origin and destination at sea.

If you are a marketing representative with a shipping line, and unless you want to get stuck with the cost of moving your imports back empty from, for example, Davisville, you must ensure in advance that you're going to have a load waiting for you as close as possible both in distance and time to the point at which you're going to surrender that container. No one wants to move boxes to points where there are no returns waiting. Yet, that is typically what happens.

This is where the PIDN system steps in. It is precisely this function. Each one of the feeder ports is a regional port and would, in fact, provide a depot. They are located in the points of highest density of trade within the northeast area for international containerized trade, and generally, as close as possible to the largest shippers and consignees' places of business. At these points, the potential for finding a backhaul within a short distance is maximized. Thus, each one of the regional ports is, in fact, a depot to handle what we call empty management functions. This includes the storage of containers, the short-term layover of containers, the empty receipt and dispatch, and, if you're a member of the regional port pool, the interchange and interline of loads going out with loads coming in.

Just as the empty management is a crucial aspect that a regional port can work with, so too is chassis management an absolutely crucial aspect, particularly looking at European dependence on the lift-on/lift-off system. We have patterned a lot our thinking, particularly for Davisville, along the lines of their ability to manage chassis with that system. In the Port of New York and New Jersey it takes about 28 days. Once the chassis is out of the port, it cycles around and by the time it comes back in, it is about 28 days. The ownership costs, maintenance costs, etc. runs about $5.00 a day. It is not a very heavy calculation to figure out what a fleet of 350,000 TEUs – the level of traffic many of our carriers have in the Port of New York – is going to run up the cost – a tremendous cost.

If you come into PIDN and it is a lift-on/lift-off system, and it is a grounded container terminal like Maher Terminal, it is going to go immediately into the stack. The straddle carrier will carry it and a crane will lift it onto the barge. There is no chassis involved. It is going to be grounded on the barge and it won't see a chassis until it gets to the regional port. It is at that time and at that place that the chassis pool will have to work, via a local chassis pool and again, maintained by the regional port operator or a pool by specialized operator. Our calculations show that would be about a 7-day cycle. The cost will probably be higher because it will own the chassis. The shipping line won't own it – the trucker won't own it – the chassis manager will. The price may be as high as $8.00 in that function. Between these two functions, we can see savings of about $80.00.

There is another crucial area absolutely central to our thinking and it has to do with value-added services. I want to call your attention to something that Bill talked about, the essentially double market area that you see both in the Port of New York and New Jersey and in Rotterdam and elsewhere. You have this supernova of trade right around the port, within a 50-mile radius in the case of New York. It is even closer around Rotterdam. From there you have a graduation of trade out into the outskirts. PIDN is, in fact, set up to handle that, although we have found certain cases it is even being provided increasingly closer in.

We've noticed some interesting growth dynamics over the last 10 years. We have been growing in the Port at around 5%. But, if you dissect that growth, the first period of about 7 years of it was growing at about 4%. The last few years we have grown at a higher rate at about 7.5%. If you dissect that growth even further, you see some changes taking place in terms of the origin and destination of direct deliveries, the most important of which is a growth in terms of share of

the total composed by Asia cargo, going up as you can see from 23% to 30%. This is a major and unexpected shift, particularly coming about in a relatively short amount of time.

What happened with that Asia cargo is that the dimensions of that cargo, the structure of that cargo differs greatly from what we had expected or what we used to in the past. Instead of being beer and wine spread over a whole series of commodities, it has been centralized. Basically what is coming into Asia now is a large percentage of electronics (which hardly shows up in the European scale), toys and things that need value-added services. All of a sudden, overtures are being made on the handling of this commodity in a very different way than the typical seamless transportation concepts that have been endorsed in the past.

Transloading becomes critical, taking it out of the port and handling it as close as possible to the ultimate destination. In addition, value-added services can be provided at that point, something that we can't provide in the relay port because of the lack of available land; however, it could be applied and provided at the regional port. It is a service that we see in Europe and it is crucial. It isn't just a matter of barge versus truck, although that is a crucial aspect. It is empties management; it is chassis management; and provision of distribution and consolidation services.

Previous speakers talked about the role as a model of the port of European experience and for us it has been Rotterdam. Rotterdam is cooperating with the PIDN program and I just want to take a look a second to provide a dimension of the kinds of responses they provide. They have a very different hinterland, but it is similar in structure as far as mileage is concerned. You have a dense immediate zone right around the port, spreading out on the delta of the river, but with a tremendous number of local, regional feeder ports.

The port itself is instrumental and Rotterdam's master plan is one of my favorite designs of a port. It is about 20 years ahead of us. Right down the center is a Delta terminal, the new dedicated terminal, designated by the symbol 6, for the short sea services mentioned earlier. Down the middle is the barge basin. They have been into the business of moving it for about 11 years, and it has already spread to about 40% of their total. This should give us a lot of hope.

There are also intermodal rail facilities. What I am most interested in is the distribution, consolidation, value-added part that they built right next to the port itself. This concept is similar to the goal we are striving for in the Port of New York and New Jersey.

This links to a relatively close feeder port up the Rhine, called Rigerhaven. It has a capability to handle typical lift-on/lift-off European type barges that can run anywhere. You can see them carrying two carriers all the way up to 100 containers – 4 across, which allows the crane to lift off the surge of containers and put it right at the warehouse. It is an advantage that is very difficult for us to assess. In this case, there are 850,000 square feet of on-dock warehousing. If you look around that neighborhood, all of the warehousing in and around that general vicinity of Rigerhaven, is dependent upon that relatively small barge terminal.

Another interesting sidelight is that there is an office building on top of the barge terminal and the whole thing has been made to look like a ship. Right across from it is one of the big complexes that tourists go to see -- a bunch of windmills turning in the Dutch skyline. Right

behind it across the other side of the river, sits this very large passenger ship, which is in fact one of the largest barge terminals in Europe. We hope to do something like that within the PIDN program, particularly in Bridgeport. There are other vessel feeder terminals, one of which is Panalpina, which has the ability to deliver the box from a barge directly to the warehouse door in a manner we are going to try to strive for with PIDN.

The PIDN system is, in fact, composed of three different trade routes. There is one going north to Albany called the Hudson trade route. The pendulum port is Albany and at some point we will probably be stopping at Newburg. Another trade route goes up to the Port of Davisville, which is the pendulum port with an interim stop at Bridgeport. It may be its own separate system. Another trade route going south is called the Mid-Atlantic trade route, with two stops planned -- one at the Port of Camden or Salem and the other at the pendulum Port of Wilmington. The Port of Wilmington is quite a strong container port itself and the system can carry containers back from that which Wilmington is getting and feed those back up into the New York area.

At the Port of Davisville we are contemplating using a 420-TEU type of barge that would have be filled up to 80% in order to get the scale up on the system. We know a lot about market area it will serve, because we have done a lot of interviewing and working with the shippers and consignees in the market area. Currently, it handles – and this is from all sources – about 600,000 TEUs a year, of which only about 40% go through the port. That is basically the 40% or a share of that 40% that we are looking at. We know the shipping lines that are bringing the containers and the countries from which they are coming. We know the shippers and consignees. We have talked to many of them and asked whether they control the cargo or the shipping line controls the cargo.

We know the shipping lines that are coming into the ports and what they are bringing it. We have a pretty good idea of the cost. Even if you take that barge back or that empty back, which we don't like, we have a cost advantage. This is a cost pro forma we like. This is why the empty chassis management system is involved, because the cost spread is certainly more beneficial.

The forecast for Davisville goes up from about 37,000 up over a period of 40 years to a point of somewhere in the nature of 300,000 TEUs. We are taking a phased-in approach to the terminals, and at the beginning will have to make-do with what we have. This is not a high-tech operation. In fact, this is one of the things that make it the least expensive as possible. What is important here is that we have some existing warehouse facilities, about 300,000 square feet when we're done with it, and the ability to take it off with a crane, move it by straddle carrier back to the gate. It is a grounded facility, with an empties management area. The whole thing is about 50 acres with more than 200,000 square feet of warehouses. This is pretty much how the system works -- stressing the warehousing capabilities, stressing the chassis management and the empties management, the cost savings, and placing it as what we call a dense trade center.

Thank you very much.

Marc Stanley, Bollinger/Incat

In one way or another, everyone on the panel and in my segment of the industry, has been looking for the salvation of coastwise trade and shipping. I'd like to share a little of the history from a shipbuilder's perspective and explain to you why those speaking on this panel from other perspectives are bound with a certain set of parameters that cannot easily be changed.

For example, it is interesting to understand the problem of ship speed as well deal with any type of transportation problem. Basically, you divide ships into two categories – either displacement or non-displacement ships. Most of the time, the ship we see and deal with is a displacement type vessel, meaning one that stays in the water, does not plane. Because of that, it is limited to certain physical formulas that limit its speed. It is very simple – that particular formula is the square root of the water line link from a constant value of 1.3.

To give you a quick interpretation of that – if the vessel is 100 feet long and its square root is then 10, its maximum speed is 13 knots. We can apply that formula in every displacement vessel and quickly understand to get high speed ships of 30 knots or more, one of two things has to happen: the ship has to be very big, a waterline length of say 400 feet, that brings you back to a square root of 20 and a speed of about 26 knots or better; or the vessel has to plane. Those are the only two alternatives. The larger ships are not suitable for high-speed coastwise trade because of the depths. Conversely, many times when we talk about coastwise trade, we assume coastwise trade is sheltered, but it is fraught with its own set of weather problems, and in many cases, it is fraught with congestion problems of its own and weight restrictions. Therefore, a very delicate balance has to be looked at when we start considering what type of ship can be used in high-speed coastwise transportation.

Surely, the barges that have been talked about here this morning are the most cost-effective, reliable forms of water-based transportation and we've been using them all the way back to Noah and the Egyptians. Actually, the heart of our transportation center in mid-country is barge-based. However, because of the geographic locations and some of the waterway restrictions, what has been duplicated in the Mississippi River basin is very difficult to duplicate on the East Coast.

I want to expose you to a particular vessel that we just leased to a consortium of government agencies, namely the United States Army and Navy, which as one of the earlier speakers indicated, has just entered a one-year contract to possibly be extended to a two-year contract to prove the viability of this form of transportation. Basically this vessel is about the size of a football field -- 300 feet long, 100 yards long, and about 30 yards wide, or 90 feet wide. The latest evolution in the series of vessels is a 112-meter vessel.

I want to offer a little background on these particular ships. Dealing in the sea is probably the most difficult environment for engineers to calculate, because the stresses and strains and environmental conditions on a sea-based craft are much more unpredictable than any other environment that we deal with. When we put an aircraft into the air, there are very few environmental conditions to deal with, as opposed to sea-based vessels. For centuries, starting back with Noah on up to my father in the shipyard business, those engineers did not know how to record or predict what happened to a vessel when it left, and their standard was what came back was okay. If it didn't come back, certainly it wasn't okay. There were centuries of a little

bit at a time changing things about ship at the risk that it wouldn't come back. When we got into the 60's and 70's we were able to start string-gauging vessels and looking at some of the internal dynamics of what was going on in hull structure, and that allowed us to start optimizing structural systems. This was the beginning of high-speed craft coming into its own age.

What happens with this particular vessel is that since the 70's, the group at Incat in Tasmania, has been developing high-speed wave piercing platforms. Consequently, these platforms have been put into service, optimized and proven themselves to have commercial value in the markets they serve. As they have proven themselves in the commercial markets, and I will say that all of these vessels that have been combination vessels -- in this company's case, that means people, cars and trucks rather than just people. As these people and the company have proved themselves in the commercial applications, they have moved into the military applications. It is interesting to note that in the U.S., the reverse is happening.

This chart gives you a good representation of the dynamics of the evolution of the hulls, starting with the ones on the bottom. You can graphically see how the current technology has led us to a vessel that achieves what we're looking for, or the milestone that we're looking for, specifically, one that could carry one thousand tons at 40 knots for 1,000 miles. That seems to be a combination that is really sought after in this particular market. One of the interesting criteria is that none of the cargo, none of the trucks or cars is every tied down in transit. These are sheer roll-on/roll-off without any equipment tie-down. I gives you an idea how stable these platforms are, even in fairly severe sea states.

Our need for high-speed craft for the military in the U.S. did not reappear until the early 80's when we sought to interdict drugs coming into the country. Prior to 1980, my experience was relatively oilfield based, and then I led Bollinger into the high-speed craft in the early 80's. Over the period of now 20 years, as we have dealt with high-speed craft, our step into this particular hull form is truly unique. This is totally unlike anything else that has been developed that we're aware of and certainly for those of you who have not been aware or seen these vessels, they are truly awesome. In a typical roll-on/roll-off type situation, these are typically fitted with either in-ramps or side-ramps and the unique thing about these platforms is that they are large enough in beam width that a standard 40-foot truck can u-turn at the end of the ferry. Everything can drive on and drive directly off.

One of the routes that was shown this morning is a route that went all the way up to Bangor. This is a ferry service -- a people and a car ferry that runs between Bangor and Nova Scotia – that has been operating for about the last four summer seasons, or even longer. The interesting thing about this particular vessel is that for utilization of the vessel in the winter months, when that route is closed, this vessel transits on its own power and own bottom back to Australia and works the southern hemisphere and the northern hemisphere in the winter. That proves to me and shows you the capability of these large high-speed platforms truly to be international transit capable. Earlier vessel designs, not really designed for cargo, carried anywhere from 400-600 people onboard for a period of time of anywhere from 12-24 hours. There are is overnight sleeping accommodations, hot berths, entertainment facilities, galley and mess equipment that are also included in these platforms. The technology today has given us fairly reliable speeds in the 35-40 knot category.

As we start looking at working away from the hubs, the big advantage of this platform is to be able to operate in water depths of about 12 feet. Our experience in the Far East and in Europe is that it is a very flexible and agile platform that can come in and utilize existing small community ports and even fishing piers to offload its cargo. It is not limited to having the expensive, well-organized deep-water port facility to work in. It can work in some very extreme port conditions.

An overview of the terminal operations in the areas we operate in shows you the flexibility of some of the equipment's interiors, where they incorporate removable and mezzanine decks, where you can change your cargo from trucks on an outbound trip to cars on a return. This touches on the need, in our case, where we are hauling people and cargo to meet all the Coast Guard and other requirements to handle those people safely in the event of a need to evacuate at sea. All of these are approved by ABS and Lloyds and most of the international societies to ensure safety in seakeeping.

One of the first defense applications of this hull form was done in Australia with a boat named *Jervis Bay*. On the defense side, the current experiment going on with a vessel in this country is really targeted. The primary interest, by far, is from the Army transportation side, what they are looking at running spokes from the hub in theater operations like the Mediterranean or the Far East.

I appreciate your time this morning.

Thank you.